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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,245	12/18/2001	Noriyoshi Sato	SHIG C10505	1870

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Norman P Soloway
Hayes Soloway Hennessey Grossman & Hage
130 W Cushing Street
Tucson, AZ 85701

EXAMINER

CROWELL, ANNA M

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 01/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/019,245

Applicant(s)

SATO ET AL.

Examiner

Michelle Crowell

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 02-12-02 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation, "the apparatus consists of at least one collecting electrode" which is confusing. The term "consists of" is a closed-type transition phrase which limits the apparatus to one collecting electrode. However, the word "comprises" is an open-type transition phrase, which limits the apparatus to having at least one collecting electrode.

3. Claim 2 recites the limitation "said electrode" in line 7. There is insufficient antecedent basis for this limitation in the claim. Additionally, an electrode for plasma generation has not been claimed.

4. Claim 6 recites the limitation "said openings" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 2-3, 5, 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Setoguchi (Japanese Patent Publication 09-022875).

Note. Since plasma generation is recited in the preamble, it has not been given patentable weight.

Referring to the Drawing 1, abstract, and paragraphs [0008]-[0014], a processing apparatus of particulate dust consists of: at least one collecting electrode 13 provided around the substrate to be processed in a high vacuum enclosure 1 other than the electrode performing the generation of plasma; and electrifying means 16 capable of appropriately applying a predetermined electric potential of direct current or alternating current to the collecting electrode [0009].

With respect to claim 3, the collecting electrode of the processing apparatus has a structure that includes: a storage space 17 storing the particulates collected therein; and openings communicating between the storage space 17 and the inside of a high vacuum enclosure 1 [0010].

With respect to claim 5, the collecting electrode of the processing apparatus is in a continuous or discontinuous ring shape surrounding said substrate to be processed (abstract).

With respect to claim 8, the processing apparatus of the particulate dust, comprising: collecting electrode moving means 14 for holding said collecting electrode in a movable manner in said high vacuum enclosure [0009]&[0013-0014].

With respect to claim 9, the processing apparatus of the particulate dust comprising: exhaust means 8 for exhausting gas and the particulates in said storage space to the outside of the high vacuum enclosure [0010].

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With respect to claim 10, the collecting electrode of the processing apparatus is freely detachable (Drawing 1).

7. Claims 1-3, 5, 6, 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe (Japanese Patent Publication 59-181619).

Referring Drawing 1 and the abstract, a processing apparatus and a processing method of particulate dust in plasma, in which the particulate dust in plasma is processed when a substrate 16 to be processed is arranged in a high vacuum enclosure 10, plasma is generated in the high vacuum enclosure, and a reactive material is appropriately introduced into the high vacuum enclosure to perform processing of said substrate to be processed, the apparatus consists of: at least one collecting electrode 24 provided around the substrate to be processed in a high vacuum enclosure 10 other than the electrode 12 performing the generation of plasma; and electrifying means 27 capable of appropriately applying a predetermined electric potential of direct current or alternating current to the collecting electrode (abstract).

With respect to claim 3, the collecting electrode of the processing apparatus has a structure that includes: a storage space storing the particulates collected therein; and openings communicating between the storage space and the inside of a high vacuum enclosure 11 (Drawing 1).

With respect to claim 5, the collecting electrode of the processing apparatus is in a continuous or discontinuous ring shape surrounding said substrate to be processed (Drawing 1).

With respect to claim 6, the openings of the processing apparatus are provided on an inner periphery of said ring-shaped collecting electrode (Drawing 1).

With respect to claim 9, the processing apparatus of the particulate dust comprising: exhaust means 21 for exhausting gas and the particulates in said storage space to the outside of the high vacuum enclosure 20 (Drawing 1).

With respect to claim 10, the collecting electrode of the processing apparatus is freely detachable (Drawing 1).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Setoguchi (Japanese Patent Publication 09-022875) in view of Watanabe (Japanese Patent Publication 59-181619).

The teachings of Setoguchi have been discussed above.

Setoguchi fails to teach openings on an inner periphery of the ring-shaped electrode.

Referring to Drawing 1, Watanabe teaches a plasma processing apparatus wherein the openings of the processing apparatus are provided on an inner periphery of said ring-shaped collecting electrode (Drawing 1). By having openings on an inner periphery of the ring-shaped collecting electrode, particles are more efficiently exhausted. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the ring-shaped collecting electrode of Setoguchi with openings on an inner periphery of the ring-shaped collecting electrode as taught by Watanabe in order to efficiently exhaust particles.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Setoguchi (Japanese Patent Publication 09-022875) in view of Ri (Japanese Patent Publication 11-040398)

The teachings of Setoguchi have been discussed above.

Setoguchi fails to teach openings on an upper surface of the collecting electrode.

Note. Setoguchi includes a movable collecting electrode, and thus it can be positioned having substantially the same height as the height of the substrate to be processed.

Referring to Drawings 1 and 2 and abstract, Ri teaches a plasma processing apparatus wherein a ring member 31 with openings 31 on an upper surface for exhausting particles. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the collecting electrode of Setoguchi with the openings on the upper surface as taught by Ri in order to efficiently exhaust particles.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe (Japanese Patent Publication 59-181619) in view of Ri (Japanese Patent Publication 11-040398)

The teachings of Watanabe have been discussed above.

Watanabe fails to teach the position of the electrode having substantially the same height as the height of the substrate to be processed and openings on an upper surface of the collecting electrode.

Referring to Drawings 1 and 2 and abstract, Ri teaches a plasma processing apparatus wherein a ring member 31 positioned substantially the same height as the height of the substrate to be processed and having openings 31 on an upper surface for exhausting particles. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to position the collecting electrode of Watanabe and provide openings to the collecting electrode of Watanabe as taught by Ri in order to efficiently exhaust particles. Additionally, the mere rearrangement of parts (collecting electrode and openings) which does not modify the operation of a device is prima facie obvious.

Allowable Subject Matter

13. Claim 4 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter:

The prior art, either singly or in combinations, fails to anticipate or render obvious a particulate drawing electrode provided around each of the openings in the collecting electrode, which is insulated from the collecting electrode and capable of appropriately applying an electric potential higher than the electric potential of the collecting electrode.

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Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ishida '307, Imai et al. '437, and Harada '727 teach processing apparatus having a collecting electrode. Otani et al. teaches a processing apparatus having a particle-collecting member.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (571) 272-1432. The examiner can normally be reached on M-F (8:00 - 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

AMC *dlm*

*P. Hassanizadeh
Primary Examiner
Art 1763*